

Amendments to the claims

1. (canceled)
2. (withdrawn) The method of claim 9, wherein said variable-spring-rate spring comprises multiple parallel interlockable spring elements, and said controller controls the interlocking of said elements.
3. (canceled)
4. (withdrawn) The apparatus of claim 1, wherein said controllable-stiffness spring element comprises multiple parallel valved pneumatic spring elements.
5. (withdrawn) The apparatus of claim 1, wherein said controllable-stiffness spring element comprises a spring element and a parallel powered mechanical force source.
6. (withdrawn) The apparatus of claim 1, wherein said controllable-stiffness spring element comprises a spring element and a series powered mechanical displacement source.
7. (withdrawn) The apparatus of claim 1, wherein said controllable-spring-rate spring element further comprises: a. a first spring element disposed between said proximal end and said distal end; b. a mechanical energy storage element; c. a controllable power source configured to store energy in said energy storage element; d. a controllable coupling between said energy storage element and said first spring element; e. a controller configured to control timing and rate of power output of said controllable mechanical power source, and coupling of controllable coupling.
8. (withdrawn) The apparatus of claim 7, wherein said controllable mechanical power source comprises a muscle and a controllable mechanical coupling between said muscle and said energy storage element

9. (canceled)

10. (withdrawn) The method of claim 9, wherein said variable-spring-rate spring comprises multiple parallel interlockable spring elements, and said controller controls the interlocking of said elements.

11. (withdrawn) The method of claim 9, wherein said variable-spring-rate spring further comprises a first spring and an energy storage element, and further comprising: a. storing energy from a power source in said energy storage element during a first span of time; b. releasing energy from said energy storage element in the form of mechanical work displacing a proximal end of a prosthesis from a distal end of said prosthesis or orthosis during a second span of time.

12. (new) A prosthetic or orthotic leg comprising, in combination,
a mounting member for attaching said prosthetic or orthotic leg to a biological limb of a human body,

a support member connected at its upper end at a knee joint for rotation with respect to said mounting member,

a foot member including a rearwardly extending heel portion and a forwardly extending toe portion that make periodic bearing contact with the ground during a walking, running or jumping gait cycle of said human body, said foot member being connected at an ankle joint to the lower end of said support member for rotation relative to said support member,

a first spring for storing energy when said support member rotates about said knee joint to move said foot member rearwardly with respect to said knee joint and for releasing energy to rotate said support member about said knee joint to extend said support member, and

a second spring for storing energy when said support member is rotated about said knee joint to extend said support member and for releasing energy to rotate said foot member about said ankle joint to increase the bearing force applied to the ground by said toe portion.

13. (new) The prosthetic or orthotic leg set forth in claim 12 wherein first spring stores energy when said support member rotates about said knee joint to move said foot member rearwardly with respect to said knee joint during an early stance knee flexion stage of said gate cycle that follows heel-strike when said heel portion of said foot member first contacts the ground and provides shock absorption and maintains the center of gravity of said human body at a more constant level

14. (new) The prosthetic or orthotic legs set forth in claim 13 wherein energy released by said first spring is transferred to said second spring as said support member rotates about said knee joint to extend said support member.

15. (new) The prosthetic or orthotic leg set forth in claim 12 wherein said second spring also stores energy during a dorsi-flexion stage of said gate cycle when said support member rotates forwardly about said ankle joint as said foot member remains in contact with the ground.

16. (new) The prosthetic or orthotic leg set forth in claim 15 wherein energy released by said first spring is transferred to said second spring as said support member rotates about said knee joint to extend said support member.

17. (new) The prosthetic or orthotic leg set forth in claim 16 wherein said first spring is connected between said support member and a connecting point that moves relative to said support member as said support member rotates about said knee joint.

18. (new) The prosthetic or orthotic leg set forth in claim 17 wherein said second spring is connected between said foot member and said support member to store and release energy as said foot member rotates about said ankle joint.

19. (new) The prosthetic or orthotic leg set forth in claim 12 wherein energy released by said first spring is transferred to said second spring at a predetermined time during said gate cycle.

20. (new) The prosthetic or orthotic leg set forth in claim 12 wherein energy released by said first spring is transferred to said second spring while said support member rotates about said knee joint to extend said support member.

21. (new) The prosthetic or orthotic leg set forth in claim 12 wherein said second spring releases energy during the powered plantar-flexion stage of said gate cycle when the said toe portion of said foot member presses against the ground and raises said heel portion from the ground delivering power to the walking step to slow the fall of the body prior to the adjacent leg of said human body making bearing contact with the ground.

22. (new) The prosthetic or orthotic leg set forth in claim 12 wherein said first spring is connected between said support member and a connecting point that moves relative to said support member as said support member rotates about said knee joint.

23. (new) The prosthetic or orthotic leg set forth in claim 22 wherein said second spring is connected between said foot member and said support member to store and release energy as said foot member rotates about said ankle joint.

24. (new) The prosthetic or orthotic leg set forth in claim 12 wherein said second spring is connected between said foot member and said support member to store and release energy as said foot member rotates about said ankle joint.

25. (new) The prosthetic or orthotic leg set forth in claim 24 further including a mechanism for connecting said first spring to said second spring at a predetermined time in said gate cycle.